

FACULTY OF ENGINEERING
B.E. 2/4 (ECE) I - Semester (Suppl.) Examination, July 2014

Subject : Basic Circuits Analysis

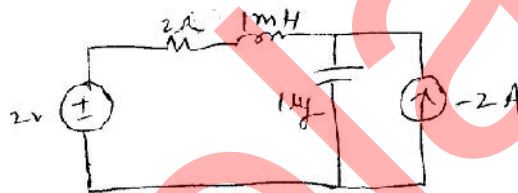
Time : 3 Hours

Max. Marks: 75

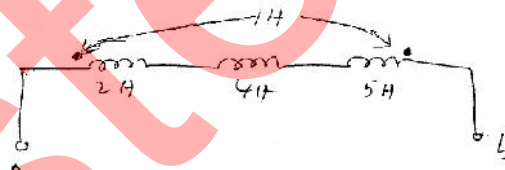
Note: Answer all questions of Part - A and answer any five questions from Part - B.

PART – A (25 Marks)

- 1 State and explain source transformation theorem. (3)
- 2 What is network duality? (2)
- 3 Define transient response and steady state response. (3)
- 4 Write integro-differential equation for the circuit shown. (2)



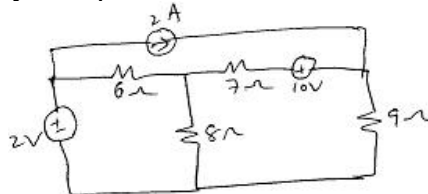
- 5 Define average power, apparent power and power factor. (3)
- 6 Find L_{eq} of the circuit shown between terminals 'a' and 'b'. (2)



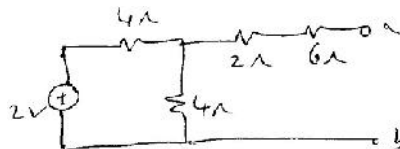
- 7 Draw the equivalent network of g-parameters. (3)
- 8 What are the conditions of reciprocity in networks in terms of L-parameters, Y-parameters? (2)
- 9 Define Selectivity and bandwidth. How are they related? (3)
- 10 How to find natural response from pole-zero plot? (2)

PART – B (50 Marks)

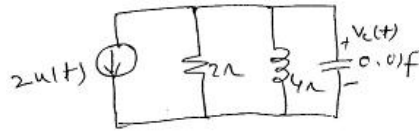
- 11 (a) Find power supplied by independent sources in the circuit shown using nodal analysis



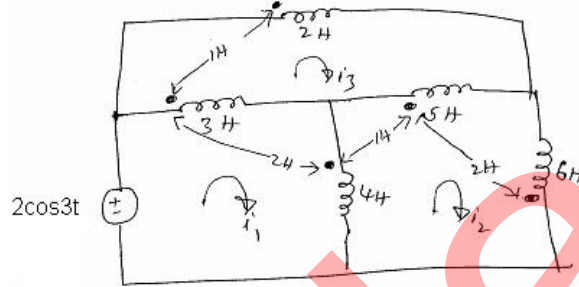
- (b) Find Thevenin's equivalent of the network shown below. (3)



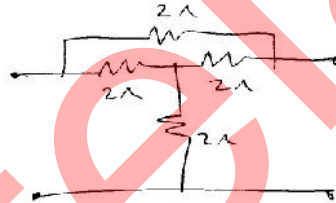
- 12 Find $V_c(t)$ for $t \geq 0$ in the circuit shown. (10)



13 Find $i_1(t)$, $i_2(t)$ and $i_3(t)$ in the network shown below. (10)

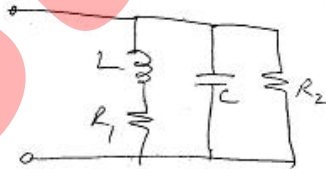


14 (a) Find transmission parameters for the network shown below. (7)

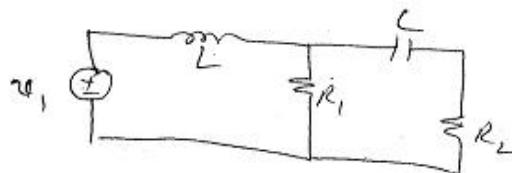


(b) Explain T - π transformation. (3)

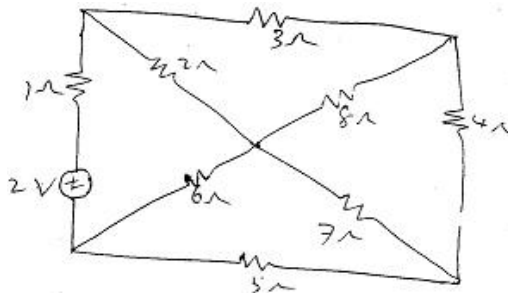
15 (a) Derive expression for resonant frequency of the circuit shown. (7)



(b) Draw Dual of the network shown below. (3)



16 Find cut-set schedule for the network shown below. Solve for branch currents and branch voltages.



17 Write short notes on : (4 + 3 + 3)

- (a) Maximum power transfer
- (b) Power triangle
- (c) Practical and ideal transformers
